

## **CLAIMS**

1. A method of presenting time-varying multimedia content, the method comprising:

receiving in a buffer a lower quality data stream for an initial portion of the multimedia content wherein the lower quality data stream is received at a rate faster than a real-time playback rate for the multimedia content, the lower quality data stream having been encoded at a bit rate below a transmission rate;

receiving in the buffer a higher quality data stream of a subsequent portion of the multimedia content, the higher quality data stream having been encoded at a bit rate that equals the transmission rate;

presenting the initial portion of the multimedia content at the real-time playback rate;

presenting the subsequent portion of the multimedia content at the real-time playback rate; and

wherein receiving the initial portion faster than the real-time playback rate provides for a reduction of the latency due to buffering by a desired amount.

2. The method of presenting multimedia content as claimed in claim 1, wherein the latency due to buffering is reduced to near zero.

3. The method of presenting multimedia content as claimed in claim 1, wherein the act of receiving in a buffer a lower quality data stream comprises receiving an embedded bit stream having a reduced number of enhancement layers.

4. The method of presenting multimedia content as claimed in claim 1, wherein, the lower quality data stream and the higher quality data stream are spliced together forming an encoded bit stream.

5. A video on demand delivery system, the system comprising:

a processor; and

a memory operatively coupled to the processor, the memory comprising computer-program instructions executable by the processor to deliver multimedia data over a network to a client buffer, the computer-program instructions comprising instructions for:

encoding the multimedia data as an encoded bit stream having an initial portion and a subsequent portion, the initial portion being encoded at a bit rate less than a transmission rate, the subsequent portion being encoded at a bit rate equal to the transmission rate; and

transmitting the initial portion faster than real-time at a bit rate equal to the transmission rate such that the client buffer receives the initial portion faster than the initial portion is removed from the client buffer during real-time playback of the content.

6. The video on demand delivery system as claimed in claim 5, the application further causing the system to construct the encoded bit stream having the initial portion represented with a low resolution encoding and the subsequent portion represented with an encoding having a higher resolution than the low resolution encoding.

7. A video on demand delivery system as claimed in claim 5, further comprising tools enabling a user to manage the delivery of the multimedia data.

8. A method of transmitting time-varying multimedia data between a server and a client, the method comprising:

transmitting an encoded bit stream for the data from the server to the client, the encoded bit stream having an initial portion represented with a low resolution encoding and a subsequent portion represented with an encoding having a higher resolution than the low resolution encoding;

receiving the encoded bit stream by a buffer of the client so that the initial portion is received faster by the buffer than the initial portion is removed from the buffer during real-time presentation of the multimedia data;

presenting in real-time the initial portion of the encoded bit stream with an application on the client;

presenting in real-time the subsequent portion of the encoded bit stream with the application on the client; and

wherein transmission of the initial portion of the encoded bit stream stops and transmission of the subsequent portion begins when the buffer of the client contains enough data to prevent underflow or overflow while presenting the subsequent portion of the encoded bit stream.

9. A method of transmitting time-varying multimedia data as claimed in claim 8, wherein the initial portion of the encoded bit stream is encoded at a bit rate below a transmission bit rate.

10. A method of transmitting time-varying multimedia data as claimed in claim 9, wherein the subsequent portion of the encoded bit stream is encoded at a bit rate equal to the transmission bit rate.

11. A video on demand delivery system as recited in claim 8, wherein the computer-program instructions further comprise instructions for:

stopping transmission of the initial portion as a function of whether the client buffer has received enough of the initial portion to guard against underflow of the buffer during decoding operations; and

transmitting the subsequent portion to the client buffer.

12. A computer-readable media having computer-executable instructions for presenting time-varying multimedia content, the computer-executable instructions comprising instructions for:

receiving in a buffer a lower quality data stream for an initial portion of the multimedia content wherein the lower quality data stream is received at a rate faster than a real-time playback rate for the multimedia content, the lower quality data stream having been encoded at a bit rate below a transmission rate;

receiving in the buffer a higher quality data stream of a subsequent portion of the multimedia content, the higher quality data stream having been encoded at a bit rate that equals the transmission rate;

presenting the initial portion of the multimedia content at the real-time playback rate;

presenting the subsequent portion of the multimedia content at the real-time playback rate; and

wherein receiving the initial portion faster than the real-time playback rate provides for a reduction of the latency due to buffering by a desired amount.

13. A computer-readable media as recited in claim 12, wherein the computer-executable instructions further comprise instructions for:

stopping transmission of the initial portion as a function of whether the client buffer has received enough of the initial portion to guard against underflow of the buffer during decoding operations; and

transmitting the subsequent portion to the client buffer.

**14.** A computer-readable memory having computer-executable instructions to deliver multimedia data over a network to a client buffer, the computer-executable instructions comprising instructions for:

encoding the multimedia data as an encoded bit stream having an initial portion and a subsequent portion, the initial portion being encoded at a bit rate less than a transmission rate, the subsequent portion being encoded at a bit rate equal to the transmission rate; and

transmitting the initial portion faster than real-time at a bit rate equal to the transmission rate such that the client buffer receives the initial portion faster than the initial portion is removed from the client buffer during real-time playback of the content.

**15.** A computer-readable memory as recited in claim 14, wherein the instructions for encoding generate the encoded bit stream such that the initial portion represents low resolution encoding and the subsequent portion represents a higher resolution encoding as compared to the low resolution encoding.

16. A computer-readable media having computer-executable instructions for transmitting time-varying multimedia data between a server and a client, the computer-executable instructions comprising instructions for:

transmitting an encoded bit stream for the data from the server to the client, the encoded bit stream having an initial portion represented with a low resolution encoding and a subsequent portion represented with an encoding having a higher resolution than the low resolution encoding;

receiving the encoded bit stream by a buffer of the client so that the initial portion is received faster by the buffer than the initial portion is removed from the buffer during real-time presentation of the multimedia data;

presenting in real-time the initial portion of the encoded bit stream with an application on the client;

presenting in real-time the subsequent portion of the encoded bit stream with the application on the client; and

wherein transmission of the initial portion of the encoded bit stream stops and transmission of the subsequent portion begins when the buffer of the client contains enough data to prevent underflow or overflow while presenting the subsequent portion of the encoded bit stream.

17. A computer-readable medium as recited in claim 16, wherein the initial portion of the encoded bit stream is encoded at a bit rate below a transmission bit rate.



18. A computer-readable medium as recited in claim 17, wherein the subsequent portion of the encoded bit stream is encoded at a bit rate equal to the transmission bit rate.